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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,455

04/27/2006

John H. Clements

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3435

29089

7590

08/05/2008

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EXAMINER

QIAN, YUN

ART UNIT

PAPER NUMBER

4162

MAIL DATE

DELIVERY MODE

08/05/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,455	Applicant(s) CLEMENTS ET AL.	
	Examiner YUN QIAN	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-5, 7-8 and 17 are rejected under 35 U.S.C.102 (b) as being anticipated by Callinan et al. (US 6,030,355).

Regarding claims 1 and 17, Callinan et al. discloses an orthopedic support material comprising a water-soluble silicate having $\text{SiO}_2/\text{M}_2\text{O}$ ($\text{M}=\text{Li}, \text{Na}, \text{K}, \text{and } \text{NR}_4$), with the hardening agent of alkylene carbonates (such as ethylene, propylene, butylene and glyceryl carbonates, and combinations thereof) (claim 1, 4, 10 and col.7, lines 9-15).

Regarding claim 2, Callinan '355 discloses the orthopedic support material containing at least 1 part silicate in about 6 parts of water, which encompasses the instant claim 2 (col.13 lines 15-33 and claim 1).

Regarding claim 4, Callinan '355 discloses the ratio of $\text{SiO}_2/\text{M}_2\text{O}$ is 2.4 to 1 (col.13, line 21).

Regarding claim 5, Callinan '355 discloses the hardening agents including ethylene, propylene, butylene and glyceryl carbonates, and derivatives and combinations thereof. A proper mixing from above group of alkylene carbonates would have the freeze points below 15°C (col.7, lines 10-15).

Regarding claims 7-8, Callinan '355 discloses the aqueous solution containing 42% water, and the weight ratio of sodium silicate to harden agent (propylene carbonate) is about 71% to 29%, so the amount of silicon in the total weight of composition is about 40%, which encompasses the instant claims (col. 13, lines 15-33).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 9-17 are rejected under 35 U.S.C.103 (a) as being unpatentable over Callinan et al. (US 6,030,355).

Callinan '355 teaches an orthopedic support material comprising a water-soluble silicate having $\text{SiO}_2/\text{M}_2\text{O}$ ($\text{M}=\text{Li}, \text{Na}, \text{K}, \text{and } \text{NR}_4$), with a hardening agent (claim 1, 4, 10 and col.7, lines 9-15). Particularly preferred hardening agents are the alkylene carbonates (ethylene, propylene, butylene and glyceryl carbonates) and their combination thereof, i. e, a 50:50 (by weight) mixture of propylene carbonate and ethylene carbonate (col.7, lines 27-35).

Although, Callinan '355 does not specially discloses the combination of glycerine carbonate and other alkylene carbonate, it would be obvious to one of ordinary skill in the art at the time of invention was made to know that the set time and the strength of

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cast can be controlled by varying the combination of alkylene carbonates from the group above with a particular soluble silicate.

Regarding claims 9-12, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the mixture of propylene and ethylene carbonates with glycerine and ethylene carbonates, and optimize the compositions to a desirable ranges (such as a mixture of 40:60), because the glycerine carbonate may be beneficial to increase its molecular weight by reacting the free hydroxyl group with epoxy or isocyanate compounds. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Regarding claims 13-14, as discussed above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute with a about 40:60 mixture of glycerine carbonate and propylene carbonate. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Regarding claim 15, as discussed above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute with a 40:60 mixture of glycerine carbonate and butylene carbonate.

Regarding claims 3 and 6, Callinan '355 presents an example of preparing a hardening article by adding water to a water-soluble silicate and propylene carbonate. The composition of material was 71% sodium silicate and 29% of propylene carbonate. As discussed above, because the glycerine carbonate may be beneficial to increase its

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molecular weight by reacting the free hydroxyl group with epoxy or isocyanate compounds, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute propylene carbonate with 29%wt of mixture of glycerine carbonate and propylene carbonate. So the weight percent of hardening agent is about 29%, which encompasses the instantly claimed.

Regarding claim 16, Callinan '355 discloses the % wt of water, hardening agent and silicon on the total amount of silicate solution. The examiner realizes that not all physical properties, i.e. concentration of silicon in aqueous solution, are stated in the references. Since the references teach all of the claimed reagents and conditions, therefore, the concentration of silicon in aqueous solution would expect to be same as instantly claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUN QIAN whose telephone number is (571)270-5834. The examiner can normally be reached on Monday-Thursday, 10:00am -4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number

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for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YQ

August 4, 2008

/Melvin C Mayes/

Primary Examiner, Art Unit 1791